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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,743	03/23/2004	Diwakar Garg	06500 USA	2546

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AIR PRODUCTS AND CHEMICALS, INC.  
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ALLENTOWN, PA 181951501

EXAMINER

LESTER, EVELYN A

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/806,743

Applicant(s)

GARG ET AL.

Examiner

Evelyn A. Lester

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-16 and 18 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/06</u>  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 4-16-06 was filed after the mailing date of the first office action on 10-4-05. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Specification***

2. On page 9, paragraph [0027], the Applicants need to update the status of the U.S. patent application, by amendment, as being abandoned.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 9-12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Westfall et al (U.S. Patent 6,515,787 B1).

Westfall et al is interpreted as disclosing the claimed invention, as especially noted for example in Figures 17-22 and their accompanying text, of an electrochromic

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device wherein at least one, but less than all, of the claimed element layers is provided by plasma enhanced chemical vapor deposition (PECVD), wherein the claimed element layers include:

- a first electron conducting layer (electrode 80) on a substrate (20);
- a working electrode in communication with the first electron conducting layer (electrochromic or active layer 70);
- an ion conducting layer in communication with the working electrode (electrolyte 60);
- an ion storage electrode in communication with the ion conducting layer (50);
- and a second electron conducting layer in communication with the ion storage layer (second electrode 30).

Westfall et al's invention further discloses the working electrode or active layer is tungsten trioxide ( $\text{WO}_3$ , note col. 4, lines 38-44) as recited in claim 10; the electrochromic device is completely solid state, as the invention's layers are deposited to particular thicknesses without sealing means and because the materials utilized in Westfall et al's invention are solid state materials, which collectively make the device solid state, as recited in claim 9; the electrochromic device also provides above the second electron conducting layer a "barrier layer," for example a hermetic sealing layer (note for example Figure 17), as recited in claim 11; and as part of the method of producing the electrochromic device the working electrode is provided "before or after" the second electron conducting layer is provided in communication with the ion storage layer, as recited in claim 12.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-8, 14, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westfall et al (6,515,787 B1) in view of Van Dine et al (U.S. Patent 5,659,417).

Westfall et al discloses the claimed invention as described above, except for specifically reciting whether the working electrode and/or the ion storage electrode are the only layers provided by PECVD and the other layers are provided by vacuum sputtering. However, Westfall et al does teach that at least one of the layers of the invention is deposited by PECVD and at least one layer is deposited by vacuum deposition, which includes sputtering, as noted at col. 4, lines 53-58 and col. 6, lines 6-8. Van Dine et al teaches that particularly the working electrode (i.e. electrochromic layer) and the ion storage electrode (counter-electrode) be applied by conventional techniques (noted at column 5, lines 4-8), such as plasma enhanced chemical vapor deposition, which is a conventional technique as taught by Van Dine et al, at column 1, lines 53-57. One of the reasons for Van Dine et al to utilize the method of PECVD, is because these layers in particular are injected with a colorant ion, and PECVD allows

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for this step to be accomplished effectively and economically. It has been well established in the electrochromic art, for example, that the deposition techniques used for forming the different discrete and continuous layers depends upon several parameters, such as the material being deposited, the thickness of the layer being deposited, the materials deposited in previous layers, etc. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the method of PECVD to provide the working and ion storage electrodes, due to the necessary controls of these thin film elements, as well as economic concerns.

***Allowable Subject Matter***

5. Claim 17 is allowed.
6. Claim 13 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach or fairly suggest the claimed invention of a method for producing an electrochromic device, wherein the substrate is predeposited with a barrier layer and an electron conducting layer. Clearly this is an economical way in providing the necessary layers for the claimed invention.

***Response to Arguments***

8. Applicant's arguments filed 4-4-06 have been fully considered but they are not persuasive.

The Applicant's arguments that Westfall et al does not disclose both the plasma enhanced chemical vacuum deposition (PECVD) and vacuum deposition in the same production process for the same device is not well met. Westfall et al teaches that "at least one of the layers is deposited by PECVD, which does not limit the other layers being deposited by vacuum deposition. Since PECVD is a type vacuum deposition method, it is not unlikely that other layers are deposited by another vacuum deposition since the conditions are already present for the vacuum deposition process of PECVD. Further, since Westfall et al teaches both vacuum deposition and PECVD, it is not unlikely that both are used.

Additionally, the Applicant's arguments are a bit off point. Though PECVD is not recited in the claimed invention as utilized for all the layers, it is not recited as utilizing both PECVD and vacuum deposition as argued. In fact, the recited claimed invention (except where explicitly indicated) does not recite both process methods being utilized in the same production process, which is exactly how Westfall et al has disclosed their invention, i.e. at least of the layers deposited by PECVD.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action (namely the rejection of new claim 18). Accordingly, **THIS ACTION IS**

**MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evelyn A. Lester whose telephone number is (571) 272-2332. The examiner can normally be reached on subject to an increased flex schedule, M-F, 10-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky L. Mack can be reached on (571) 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Evelyn A. Lester  
Primary Examiner  
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